Our Ref.: 42390.P7955

APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

Electronic Asset Lending Library Method And Apparatus

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"Express Mail" label number EL414969609US

El ctronic Ass t L nding Library M th d And Apparatus

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to electronic commerce for electronic products. In particular, the present invention relates to technology that enables the electronic management and reassignment of licenses for electronic products installed on computers connected through a communications network.

2. Background Information

The growth in sales of packaged software has increased tremendously over the last few years. An industry trade group reports that the worldwide market for packaged software products for all platforms topped $154 billion dollars in 1999 alone, a 14.5% increase from the market in 1998. (*IDC Puts the Worldwide Packaged Software Market at $154 Billion in 1999*, International Data Corporation, Jan. 25, 2000, Press Release). The United States accounts for approximately 70% of this worldwide market, of which $24 billion dollars represents business software installed on personal computer platforms. (*Packaged Software Industry Revenue and Growth*, Software Information Industry Association, http://www.siia.net/pubs/research/softwareoverview.htm).

Business corporations and other enterprises are one of the largest consumers of packaged software as well as numerous other types of electronic products, including electronic databases, books, digital video, electronic works of art, electronic graphics, electronic magazines and brochures, and digital audio creations and recordings. As a result of their tremendous investment in packaged software and other types of electronic products, businesses view them as valuable

electronic assets rather than consumable office products. In an effort to get the most value from their initial investment in electronic assets, corporate managers are placing more emphasis on the need to control electronic assets in much the same way as they control other corporate assets, through reuse and redeployment within the corporation whenever and wherever possible.

The notion of promoting sharing and reuse of software and other electronic products is known in the art. There are a number of widely available shareware libraries that make software and other electronic products freely available over the Internet for download and use. For example, the United States Small Business Administration hosts a shareware website that acts as a clearinghouse of freely available software to small business entrepreneurs, located at http://www.sbaonline.sba.gov/shareware/sharopts.html. In 1995, the Software Engineering Institute of Electrical Engineers developed a standard for interoperating reuse libraries to help the engineering community share reusable software (IEEE Std 1420.1-1995, *IEEE Standard for Information Technology – Software Reuse – Data Model for Reuse Library Interoperability: Basic Interoperability Data Model (BIDM),* Approved, December 12, 1995). An example of such a software reuse library is Netlib. The Netlib repository contains freely available software, as well as other electronic documents and databases of interest to the numerical, scientific computing, and other communities (http://www.netlib.org/).

One of the many limitations of the prior art shareware and software reuse libraries, however, is the lack of *controlled* sharing and reuse of electronic assets, so as to insure compliance with the electronic product's licensing restrictions, if any. As a result, users of prior art shareware and reuse libraries can potentially create an unlimited number of unauthorized copies of the software or other electronic product. A related limitation is the lack of monitoring capability so as to identify and

track the use of the electronic product from one user to the next. Moreover, shareware and reuse libraries are by their nature open to all users, and therefore lack the ability to restrict or partially restrict access to certain electronic assets based on the user's association with a particular class or group of users.

Since prior art shareware and electronic product reuse libraries do not insure license compliance, they also do not take advantage of recent advances in the technology for licensing software and other electronic products, including the use of electronic licensing schemes that electronically manage and distribute licenses for software and other electronic products installed on remote computers. Moreover, prior art shareware and reuse libraries do not even contain licensing data, but rather are content libraries that contain the actual software or other electronic content for purposes of electronic distribution over the Internet or other network. However, it is the licensing data that is necessary for businesses to monitor and control the authorized redeployment of electronic assets on remote computers; the content distribution and installation can be handled by existing distribution mechanisms. By not tracking the active users of a particular electronic asset, business administrators lose valuable opportunities for controlling the cost of electronic assets by recapturing unused assets for redeployment to other departments or users in the corporate computer enterprise that need the same product. Accordingly, a new approach for providing a reusable electronic asset library that facilitates the electronic management and reassignment of licenses is desirable, not only to to enable business administrators to control costs and get the most out of their electronic assets, but to do so in a way that insures license compliance. The integration of reuse libraries with electronic licensing technology in a user-friendly way presents a unique set of challenges, requiring a new and novel solution.

SUMMARY

According to one aspect of the invention, a method is provided in which a license is created for an unused electronic asset. The license is assigned to a first account belonging to a community, and reassigned to a second account that is eligible to use the license and which belongs to the same community as the first account.

BRIEF DESCRIPTION OF DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 illustrates an overview of the present invention and operating environment configured in accordance with one embodiment;

Figure 2 illustrates a block diagram of the functional components of the present invention in accordance with one embodiment;

Figure 3 illustrates a general-purpose computer system upon which an embodiment of the present invention may be implemented;

Figure 4 illustrates a block diagram of a typical scenario in which the present invention may be used in accordance with one embodiment;

Figure 5 illustrates an example of a display of a Re-Assign License page, in accordance with one embodiment.

Figure 6 illustrates an example of a display of a Create/Delete/View ACL page, in accordance with one embodiment.

Figure 7 illustrates an example of a display of a Lending Library Catalog/Search/Order page, in accordance with one embodiment.

DETAILED DESCRIPTION OF THE INVENTION

In the following description various aspects of the present invention, an electronic asset lending library (hereinafter "EALL") method and apparatus, will be described. Specific details will be set forth in order to provide a thorough understanding of the present invention. However, it will be apparent to those skilled in the art that the present invention may be practiced with only some or all of the described aspects of the present invention, and with or without some or all of the specific details. In some instances, well known features may be omitted or simplified in order not to obscure the present invention.

Various operations will be described as multiple discrete steps performed in turn in a manner that is most helpful in understanding the present invention. However, the order of description should not be construed as to imply that these operations are necessarily performed in the order they are presented, or even order dependent. Lastly, repeated usage of the phrase "in one embodiment" does not necessarily refer to the same embodiment, although it may.

Referring now to **Figure 1**, wherein an overview of the EALL method and apparatus in an operating environment configured in accordance with one embodiment is shown. As illustrated, the EALL server **110** in communication with library clients **130** and/or **150,** either via a secure network connection **120** or over the Internet **140**, or a combination thereof, reassigns a license for a particular electronic asset from a lender EALL client **134** or **154**, to a borrower EALL client **136** or **156**. Depending on the location of the lender and borrower EALL clients, the reassignment of the license may occur between lender and borrower EALL clients residing within a local area network served by local server **132** (e.g. **134** and **136**), or may occur between lender and borrower EALL clients residing within an external

network served by a remote server **152** (e.g. **154** and **156**), or some variation of the foregoing configuration.

Referring now to **Figure 2**, wherein a block diagram illustrating the functional components of the EALL method and apparatus are shown. The functional components include a license processor **210**, an account processor **220**, a lender/borrower interface **230**, and a license/account database **240**. Some of the functions performed by the license processor **210** include maintaining a catalog of available licenses for unused electronic assets, including license restrictions related to borrower eligibility, and applicable license fees, if any. The license processor **210** also performs functions for monitoring EALL clients, such as finding expired users of electronic assets for potential release of those assets into the EALL. Some of the functions performed by the account processor **220** include establishing, changing and deleting library accounts for EALL users, i.e. lenders, borrowers, and administrators, and maintaining their access control permissions. Accounts are grouped according to the community to which the user belongs. Access control permissions designate which EALL users in a particular community are eligible to borrow particular electronic assets, and are used in conjunction with the electronic asset restrictions to determine the conditions of use (e.g. applicable license fees, term of use, etc.). The access control permissions are set by certain administrative EALL users having access control authority within a community, such as department heads, product managers, team leaders and the like. The account processor **220** also performs functions for notifying EALL users about their accounts, such as reporting their usage of EALL electronic assets, or instructing EALL users to remove from their client computer installed EALL electronic assets whose licenses are being released back into the EALL. In one embodiment, the account processor **220** may

perform functions for triggering a process on an EALL user's client computer to disable or remove the electronic product automatically.

The EALL license processor **210** and account processor **220** perform together to maintain in the license/account database **240** the relationship between the licenses for available electronic assets and the lender/borrower/administrator EALL user accounts with which they are associated. The lender/borrower interface **230** provides the EALL users with an entry point into the EALL through which the EALL users interact with the EALL license processor **210**, account processor **220**, and license/account database **240**. In one embodiment, the lender/borrower interface **230** may use the browser facilities of the platform upon which the EALL is implemented. An alternative embodiment may be implemented as a separate application program that uses the graphical user interface facilities of the platform's operating system. The license/account database **240** is the repository for storing persistent data for the licenses and accounts processed by these other functional components. The license/account database **240** may be comprised of one physical database or a combination of different physical databases depending on the configuration of the various server and client computers on which the EALL method and apparatus is implemented.

Referring now to **Figs. 1** and **2** together, it should be understood that some or all of the above-described component functions **210**, **220**, **230**, or **240** may be performed by one or more of the various EALL servers, **110**, **132**, and **152**, and that some of the component functions may be performed by the EALL clients **130** and **150**. Furthermore, the functional components may reside on the EALL clients **130**, **150** and/or EALL servers **110** , **132**, and **152**, which communicate over a local area network as shown, for example, in the configuration of library client **130**, or over the Internet **140**, or over a wide area network or combination of networks, or any other

network configuration capable of connecting them. The physical database(s) comprising the license/account database component **240** may reside on one or more of the various EALL servers, **110**, **132**, and **152**, and portions of the database(s) may be replicated on one or more of the various EALL clients **130** and **150** and periodically synchronized as needed with the data residing on the servers.

Referring now to **Figure 3**, wherein a block diagram of a general-purpose computer system upon which an embodiment of the present invention may be implemented is shown. As illustrated, general-purpose computer system **300** comprises a bus **301**, or other communications hardware and software, for communicating information, and a processor **302** coupled with bus **301** for processing information. Computer system **300** further comprises a random access memory (RAM) or other dynamic storage device **302** (referred to as main memory), coupled to bus **301** for storing information and instructions to be executed by processor **302**. Computer system **300** also comprises a read only memory (ROM) **303**, and/or other static storage device, coupled to bus **301** for storing static information and instructions for processor **302**. Mass storage device **304** is coupled to bus **301** for storing information and instructions. In one embodiment, mass storage device **304** includes a library of licenses and client accounts used to manage the lending and borrowing of the available electronic assets by various electronic asset lending library clients.

Furthermore, mass storage device **304**, such as a magnetic disk or optical disk, and its corresponding disk drive, can be coupled to computer system **300**. Computer system **300** can also be coupled via bus **301** to a display device **321** for displaying information to a computer user such as a network manager. Display device **321** is used to display windows containing a graphical user interface to the available electronic assets managed by the electronic asset lending library. Display

device **321** can include a frame buffer, specialized graphics rendering devices, a cathode ray tube (CRT), and/or flat pane display. An alphanumeric input device **322**, including alphanumeric and other keys, is typically coupled to bus **301** for communicating information and command selections to processor **305**. Another type of user input device is cursor control device **323**, such as a mouse, a trackball, a pen, a touch screen, or cursor direction keys for communicating direction information and command selections to processor **305**, and for controlling cursor movement on display device **321**. This input device typically has two degrees of freedom in two axes, a first axis (e.g., the x-axis) and a second axis (e.g., the y-axis), which allows the device to specify positions in a plane. However, this invention should not be limited to input devices with only two degrees of freedom.

Another device that may be coupled to bus **301** is a hard copy device **324** which may be used for printing instructions, data, or other information on a medium such as paper, film, or similar types of media. Additionally, computer system **300** can be coupled to a device for sound recording, and/or playback **325**, such as an audio digitizer coupled to a microphone for recording information. Further, the device may include a speaker that is coupled to a digital to analog (D/A) converter for playing back the digitized sounds.

Network interface card **326** is coupled to bus **301**. Network interface card **326** is further coupled to an external computer network (not shown). Network interface card **326**, in conjunction with appropriate data communications protocols (e.g., the TCP/IP suite of internetworking protocols), provide the means by which a electronic asset lending library operating on a general-purpose computer system **300** exchanges information with other devices coupled to the same computer network. Modem **327** is coupled to bus **301**, and provides an alternate means of

exchanging information with other devices for which a modem connection to an external computer network or device (not shown) can be established.

Computer system **300** and EALL application software stored and executed therein as part of the EALL method and apparatus operate in conjunction with an operating system with graphics capability, such as Microsoft's Windows operating system. Commercially available computer systems implementing the features of general-purpose computer system **300** include a broad range of operating system-based computers, including server computers, desktop computers, workstations, devices, or appliances. Furthermore, the present invention may be used in conjunction with various browser (e.g. Microsoft Internet Explorer or Netscape Navigator) and electronic mail applications (e.g. Microsoft Outlook, and Lotus Notes) or other messaging applications to yield an operational EALL platform upon which an embodiment of the present invention may be implemented.

Referring now to **Figure 4**, wherein a block diagram of a typical scenario in which the EALL method and apparatus may be used in accordance with one embodiment, is shown. As illustrated, the process begins with an user/lender that owns a license for an electronic asset, such as a software application, electronic book, electronic work of art, electronic graphics item, electronic magazine or brochure, or digital video or audio creation or recording that he or she no longer needs **410**. For example, employee A may have resigned or transferred to a different department, and a new employee B fills their position. Or perhaps a project has ended and the design application software purchased for use during the project is no longer needed by employees in department C, but may be needed by employees in department D where a new project requiring the same design software has begun. In each case, the user decides to release the licenses for the unused electronic asset to the corporate EALL using the facilities of the present invention.

Using their EALL account, the user/lender invokes the functions of the EALL license processor **210** to "loan" the license to the EALL, also described as "releasing" the license to the EALL library/administrator's account **420**. The user/lender designates any license restrictions which the user/lender desires to impose on subsequent borrowers, including borrower eligibility and applicable license fees, if any, **430**. For example, the user/lender may know the specific borrower to whom he or she wishes to use the license next, or may wish to restrict use of the license to borrowers in the same department without charging a fee, or else charge a license fee for borrowers outside the department. The latter arrangement allows the lending department, or other corporate entity that made the initial investment in the electronic product, to "recoup" that investment from other users within the corporation, while at the same time saving the new user/borrower the additional expenditure associated with purchasing a new license for the product. Once the license is released, the user/lender is notified that the software application must be removed from the user/lender's computer **431**. Alternatively, the software application or other electronic product can be automatically removed or disabled **432** in response to commands generated by the EALL account processor **210** using available electronic license and electronic product distribution mechanisms.

If the new user/borrower is known **440**, as is the case with employees A and B, the newly released license can be transferred directly into the new user/borrower's EALL account **460**. In one embodiment, the new user/borrower is notified by email or other messaging service that the product can now be installed on the new user/borrower's computer **471**. Alternatively, the product can be automatically installed **472** in response to commands generated by the EALL account processor **210** using available electronic license and electronic product distribution mechanisms.

If the new user/borrower is not known **440**, as is the case with departments C and D, the newly released license remains in the EALL library/administrator's account, which allows the unused electronic asset to be made available to borrowers through the functions of the EALL user interface **230**. Later, a prospective user/borrower selects the unused electronic asset to borrow, after determining that there are available released licenses that have no restrictions that prohibit his or her use in accordance with any account restrictions set by the EALL library/administrator, or license restrictions set by the EALL user/lender **450**. The available released license can then be transferred directly into the new user/borrower's EALL account **460**. In one embodiment, the new user/borrower is notified by email or other messaging service that the product can now be installed on the new user/borrower's computer **471**. Alternatively, the product can be automatically installed **472** in response to commands generated by the EALL account processor **210** using available electronic license and electronic product distribution mechanisms.

Referring now to **Figure 5**, wherein one embodiment of an EALL user interface **230** for transferring a license is shown. To transfer a license, the license can be released to the EALL library for subsequent re-assignment, or it may be re-assigned directly from one EALL user to the next. Using a menu-based or other navigational aid, the EALL user/lender/administrator desiring to transfer a license for an unused electronic asset using the EALL navigates the EALL user interface **230** to cause the display of a Re-Assign Licenses page **510**, as illustrated in Figure 5. The EALL user/administrator can be the lender herself, or a manager, team leader or other individual responsible for managing the electronic assets for the lender and, depending on their status, may navigate to the Re-Assign Licenses page using different routes.

The Re-Assign Licenses page **510** contains, among other items, at least three input areas: one for entering or selecting the license to be transferred **520**, one for entering or selecting the EALL user to whom the license is currently assigned **530** ("From" box), and one for entering or selecting the EALL user to whom the license will be transferred **540** ("To" box). If the individual EALL user to whom the license will be transferred is unknown, i.e. the license is being released to the EALL library administrator for subsequent lending, then the EALL user/administrator simply selects the Library as the EALL user to whom the license will be transferred. When appropriate, all licenses currently assigned to a particular user may be transferred at once by entering or selecting multiple licenses in input area **520**, or alternatively entering an identifier that represents all of the licenses, including leaving the selection blank. A command button or other graphical visual icon is provided for affirmatively entering a command to carry out the transfer **550** ("Transfer") based on the selections in input areas **520**, **530**, and **540**. The sequence of EALL user interactions with the Re-Assign Licenses page **510** is summarized in **Table 1**. It should be understood that the Re-Assign Licenses page **510** as shown is for descriptive purposes only, and that other variations for accomplishing the described entry, selections or commands to the EALL user interface **230** may be employed without departing from the principles of or exceeding the scope of the present invention.

Re-Assign License	
1.	Navigate to the Re-Assign Licenses page;
2.	Select/enter the license(s) to be transferred;
3.	In the Re-Assign License From box, select/enter the user from which the license is to be transferred;
4.	In the Re-Assign License To box, select/enter the user (or library) to whom the license is to be transferred; and
5.	Click the Transfer button to transfer the license(s).

Table 1

Referring now to **Figur 6**, wherein one embodiment of an EALL user interface **230** for maintaining access control permissions of prospective borrowers of a license for a particular unused electronic asset is shown. To control access to electronic assets released to the EALL, the EALL user/administrator can create an Access Control List (ACL) that designates which users are eligible to borrow which unused electronic assets. By default, all EALL users having EALL accounts within the same community (e.g. division, department, team, etc.) are eligible to view and borrow unused electronic assets currently assigned to that community. However, the creation of an ACL restricts eligibility to only those users present on the ACL. So, for example, if user A and B are in the same community, and user A releases software X with an ACL restriction and user B is not listed on the ACL, then user B can only view software X, but not borrow it. The effect of not being on an ACL can take the form of disabling those portions of the EALL user interface **230** that would allow the EALL user to transact a loan (e.g. the "Borrow/Purchase" buttons or restricted product titles might be displayed as crossed out or shadowed to visually indicate that those actions or unused electronic assets are unavailable to the EALL user/borrower without requesting access override permission through his or her manager, team leader, etc.). EALL user/borrowers outside the community can neither view nor borrow electronic assets without requesting access override permission. Access override permission may be granted by setting up a proxy account for the EALL user/borrower or altering the ACL.

Using a menu-based or other navigational aid, the EALL user/administrator desiring to create or modify an ACL for an unused electronic asset using the EALL navigates the EALL user interface **230** to cause the display of a Create/Delete/View ACL page **610**, as illustrated in **Figur 6**. The EALL user/administrator is typically a product manager, team leader or other individual responsible for managing the

electronic assets for a particular community. Only those EALL user/administrators with authority to create ACLs will be permitted access to the Create/Delete/View ACL page **610** of the EALL user interface **230**. The Create/Delete/View ACL page **610** contains, among other items, at least two input areas: one for entering or selecting the unused electronic asset for which available licenses are to be restricted **620** or for which the existing ACL is to be viewed, one for entering or selecting the name or account of the EALL user to be added, viewed, or deleted from the ACL for the designated electronic asset **630**. A command button or other graphical visual icon is provided for affirmatively entering a command to carry out the add, delete, or view actions **640** based on the selections in input areas **620** and **630**. The sequence of EALL user interactions with the Create/Delete/View ACL page **610** is summarized in **Table 2**. It should be understood that the Create/Delete/View ACL page **610** as shown is for descriptive purposes only, and that other variations for accomplishing the described entry, selections or commands to the EALL user interface **230** may be employed without departing from the principles of or exceeding the scope of the present invention.

Create/Delete/View Access Control List (ACL)	
1.	Navigate to the Create/Delete/View ACL page;
2.	Select/enter the name or identification of the electronic asset for which license(s) are or will be restricted;
3.	Select/enter the name or identification of the EALL user you want to add/delete/view to or from the ACL for the designated electronic asset in item 2;
4.	Click the Create/Delete/View button to carry out the desired action to create, delete, or view the restrictions for the designated electronic asset.

Table 2

Referring now to **Figure 7**, wherein one embodiment of an EALL user interface **230** for borrowing a license is shown. To be eligible to borrow a license, the EALL user/borrower must belong to the same community as the EALL

library/administrator (or lender) to whom the license is currently assigned. The EALL user/borrower must also be listed on the ACL, if any, for the unused electronic asset. If there is no ACL for the desired asset, then any EALL user/borrower within the same community is eligible to borrow an available license. If the EALL user/borrower is not on an ACL, then he or she must make a request to their manager, team leader, etc. to override the ACL so that they can borrow the license. Licenses for unused electronic assets that are loaned to an EALL user/borrower belonging to the same community are typically loaned without a fee. However, if the EALL user/borrower has been restricted from access (i.e. is not on the ACL) or does not belong to the same community, the EALL user/borrower must request an override, and may be required to negotiate a purchase fee from the EALL library/administrator to whom the license is currently assigned.

Using a menu-based or other navigational aid, the EALL user/borrower desiring to borrow a license to use an unused electronic asset using the EALL navigates the EALL user interface **230** to cause the display of a Lending Library Catalog/Search/Order page **710**, as illustrated in Figure 7. The Lending Library Catalog/Search/Order page **710** contains, among other items, at least two input areas: one for entering or selecting a category that most closely matches the type of product the borrower is looking for **720**, and one for selecting or entering keyword information about the desired product the borrower is looking for **730**. A command button **740** or other graphical visual icon is provided for affirmatively entering a command (e.g. "Find Product") to carry out the category or keyword search selections in input areas 7**20** and **730**. Additional command buttons may be provided, including one to view all of the products available in the EALL user/borrower's community alphabetically **750** ("All Products"), or one to view all of the products that are newly available **760** ("New Products") since the EALL

user/borrower's last visit to the Lending Library Catalog/Search/Order page **710**. In addition, a command button is provided to transact a request to borrow or purchase a license for the product as appropriate **770** ("Borrow/Purchase"). The request to borrow or purchase a license for the product will cause the EALL to transfer an available license from the EALL library/administrator account to the EALL user/borrower's account, and subsequent notification of permission to install/download the product to the EALL user/borrower's client computer. In one embodiment, the EALL may also automatically trigger an install/download of the product to the EALL user/borrower's client computer using available electronic product distribution and licensing mechanisms in response to the EALL user/borrower's request to borrow/purchase the product using the Lending Library Catalog/Search/Order page **710**. The sequence of EALL user interactions with the Lending Library Catalog/Search page **710** is summarized in **Table 3**. It should be understood that the Lending Library Catalog/Search page **710** as shown is for descriptive purposes only, and that other variations for accomplishing the described entry, selections or commands to the EALL user interface **230** may be employed without departing from the principles of or exceeding the scope of the present invention.

Lending Library Catalog/Search/Order	
1.	Navigate to the Library Catalog/Search page;
2.	Select/enter the keyword information or category, if known, of the product for which a license is desired; and
3.	Click the Find Product/All Products/New Products command button as appropriate to view the designated product in item 2, or all of the software alphabetically, or just the new products added to the library since last visit.
4.	Click the Borrow/Purchase command button as appropriate to request the transfer of a license for the product designated in items 2 and/or 3.

Table 3

Accordingly, a novel method and apparatus is described for a electronic asset lending library method and apparatus, so as to enable the electronic management and redistribution of licenses for electronic assets installed on computers connected through a communications network.

EPILOGUE

From the foregoing description, those skilled in the art will recognize that many other variations of the present invention are possible. In particular, while the present invention has been described as being implemented in EALL servers **110**, **132**, and **152**, and EALL clients **130** and **150**, some of the logic described in functional components **210**, **220**, **230**, and **240,** may be distributed in other components of a general-purpose computer system **300**. Thus, the present invention is not limited by the details described. Instead, the present invention can be practiced with modifications and alterations within the spirit and scope of the appended claims.
